

Shenzhen Launston Technology Co., Ltd.

PRODUCT MANUAL

SD7701R (SideDefender 77G Right)

77 GHz Right Blind-Spot Detection (BSD) Radar for Heavy Trucks

商用车右盲区 BSD 雷达系统

**77 GHz FMCW | 2Tx/4Rx | Lateral 0.2–4 m | Vertical -7–7 m | 30 ms update | Low/High speed
modes | LED + buzzer**

Product Model: SD7701R (SideDefender 77G Right) | Version: V1.0 | Date: 2026.06

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1. Product Overview

Large vehicles such as trucks and dump trucks have a large right-side blind zone, a leading cause of serious traffic accidents. Because of their long body and high cab, the driver cannot fully cover the right-side blind zone with mirrors, especially when turning right or changing lanes right. SD7701R (SideDefender 77G Right) is a side-protection 77 GHz FMCW mmWave radar developed for heavy commercial vehicles to effectively solve the right-blind-zone safety problem.

1.2 Product Function

The radar detects and warns of obstacles on the vehicle's side while effectively filtering fixed obstacles such as fences and green belts, greatly improving the safety of heavy trucks. System composition: 1 × radar + 1 × LED alarm light + 1 × buzzer — an all-around three-in-one warning.

1.3 Working Modes

SD7701R has two working modes, automatically switched by vehicle speed:

Item	Low-speed mode	High-speed mode
Trigger speed	0 – 16 km/h	> 16 km/h
Alarm strategy	Alarms on ALL targets (stationary + moving) in range	Alarms only on moving targets with speed ≥ 10 km/h

2. Radar Parameters

Category	Parameter	Specification
Radar	Frequency band	76–81 GHz
Radar	Modulation	FMCW
Radar	Antenna	2Tx / 4Rx
Radar	Horizontal angle	$\pm 75^\circ$
Radar	Start-up time	≤ 1 s
Radar	Self-diagnosis	Yes
Warning range	Low-speed — lateral	0.2–2 m
Warning range	Low-speed — longitudinal	-4–4 m
Warning range	High-speed — lateral	0.2–4 m
Warning range	High-speed — longitudinal	-7–7 m
Warning range	Warning speed range	-70 ~ +70 km/h
Performance	Range resolution	0.1 m
Performance	Speed resolution	0.6 m/s
Performance	Update rate	30 ms

2.1 Electrical & Environmental

Parameter	Specification
Power consumption	< 5 W
Operating voltage	6–36 V
Operating temperature	-40 ~ +120 °C
Mounting	Side vertical mount (antenna facing up)

3. Installation

3.1 System Composition

- SD7701R radar main unit × 1 (mounted on the vehicle right side).
- LED alarm light × 1 (recommend on the right A-pillar for driver visibility).
- Buzzer × 1 (inside the cab, for clear audible warning).
- Alarm light and buzzer positions are flexible per vehicle layout.

3.2 Installation Steps

- Step 1 — Position: install on the vehicle's right side body, height 0.6–1.2 m.
- Step 2 — Orientation calibration: mount vertically with antenna facing up (the black plastic face is the antenna, facing outward). On the right side, the cable-outlet direction points to the rear; the radar plane normal must be perpendicular to the vehicle's forward direction.
- Step 3 — Fix: use the supplied bracket and screws to firmly fix the radar on the right side; ensure it is secure and vibration-free.
- Step 4 — Wiring: route the radar harness inside the body to power, alarm light, and buzzer; ensure correct, reliable connections.
- Step 5 — Function test: after power-on, observe the alarm-light self-check blink; place a test target in the right blind zone and verify the warning works.

3.3 Installation Requirements Summary

- Position: vehicle right-side body, antenna facing up, vertical mount.
- Height: 0.6–1.2 m above ground.
- Orientation: radar plane normal perpendicular to forward direction; cable outlet points to rear.
- Alarm light: recommend right A-pillar for driver visibility.
- Calibration: ensure the radar is undeformed, firmly fixed, and harness reliably connected.

4. Usage Notes

- Power: operating voltage 6–36 V; use a stable DC supply to avoid abnormal operation from voltage instability.
- Mounting direction: must be vertical, antenna up, cable outlet to the rear. Wrong direction shifts the detection zone and degrades warning performance.
- Mechanical protection: ensure the radar body is undeformed; do not squeeze, bump, or drop it. Confirm it is firmly fixed against loosening in motion.
- EMC environment: keep away from frequently-started high-power equipment and motors with strong magnetic interference.
- Test environment: no metal obstructions within the radar beam; test in an open area to avoid affecting measurement.
- Product integrity: use only factory-original units; do not disassemble. Unauthorized disassembly voids the warranty.

Figures / Illustrations

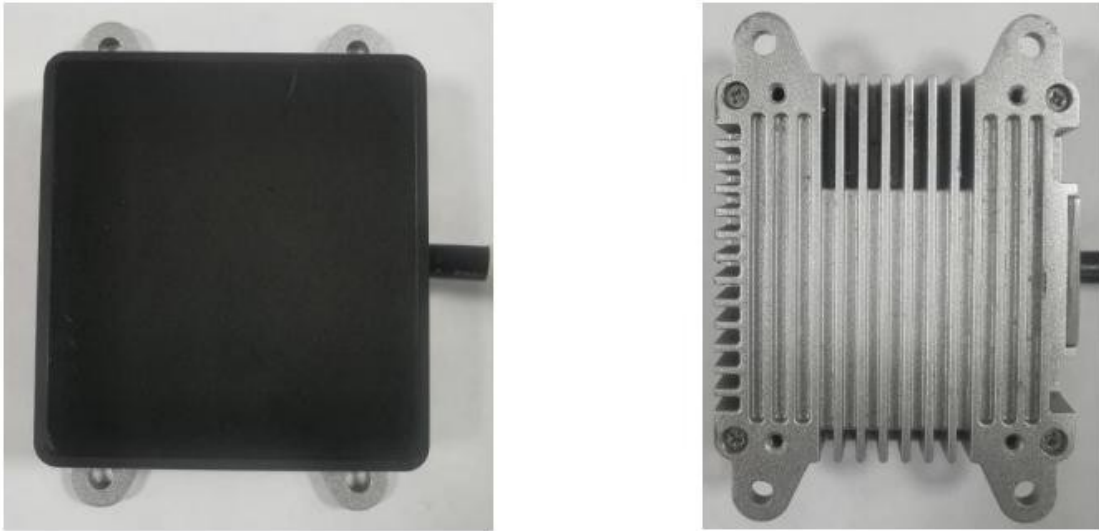


Figure 1 — original illustration from the Chinese manual (replace/remove as needed)

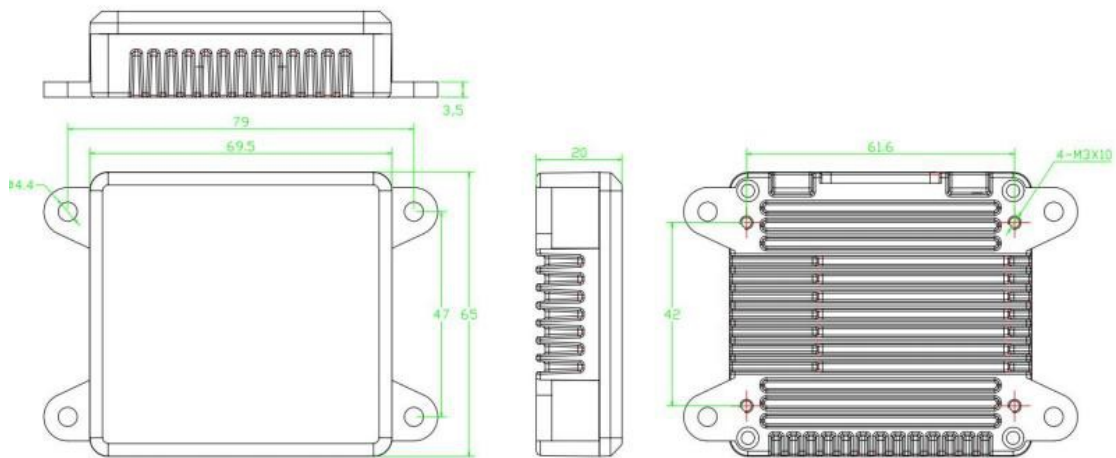


Figure 2 — original illustration from the Chinese manual (replace/remove as needed)

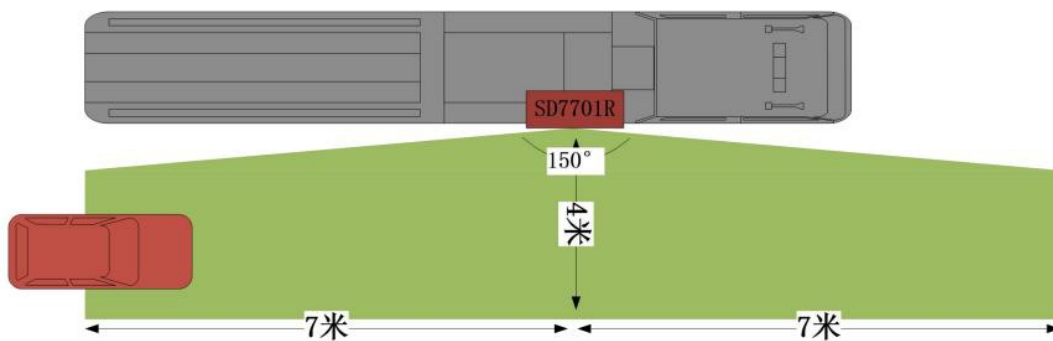


Figure 3 — original illustration from the Chinese manual (replace/remove as needed)



Figure 4 — original illustration from the Chinese manual (replace/remove as needed)

Contact

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Note: Figures are reproduced from the original Chinese manual. Replace or remove as needed before publication.

SD7701R

商用车右盲区 BSD 雷达系统

—— 产品应用手册 ——

77GHz FMCW 毫米波雷达 | 大货车/工程车专用

低速模式全覆盖 / 高速模式运动目标预警

探测范围 横向 0.2~4m / 纵向 -7~7m | 更新速率 30ms

重型商用车安全技术解决方案专家

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一、产品概述

1.1 产品背景

货车、渣土车等大型车辆的右侧盲区较大，因右侧盲区所带来的交通事故层出不穷。大型车辆由于车身长、驾驶室高，驾驶员在右转或向右变道时，右侧盲区难以通过后视镜完全覆盖，极易引发重大交通事故。

SD7701R (SideDefender 77G Right) 雷达是专为大型商用车、货车等车型研发的一款侧方安全防护 77GHz FMCW 毫米波雷达，能够有效解决右侧盲区安全问题。

1.2 产品功能

该雷达能对车辆侧方的障碍物进行探测和警示，同时有效滤除围栏、绿化带等固定障碍物，极大地提升大货车等重型车的行车安全。

系统组成：雷达本体 × 1 + LED 报警灯 + 蜂鸣器，三位一体，全方位预警。

1.3 预警示意

如图（侧方防护示意图）所示，当有目标车辆进入侧面防护区，本车雷达检测到目标并通过 LED 灯进行示警，驾驶员在此状态下，应终止向右变道等危险驾驶行为。

1.4 工作模式

SD7701R 雷达共有两种工作模式，系统根据车速自动切换：

对比项	低速模式	高速模式
触发车速	0 ~ 16 km/h	> 16 km/h
报警策略	对探测范围内所有目标（静止 + 运动）均报警	仅对速度 ≥ 10 km/h 的运动目标报警

二、雷达参数说明

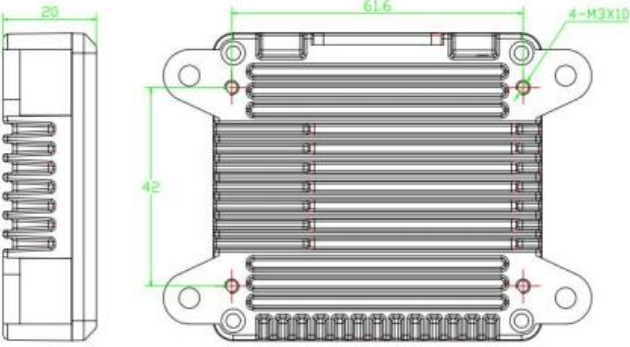
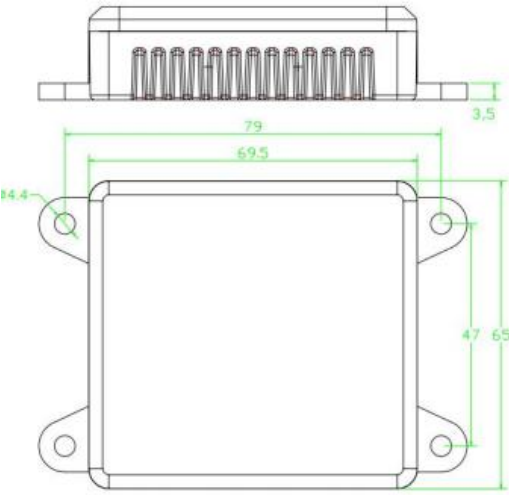
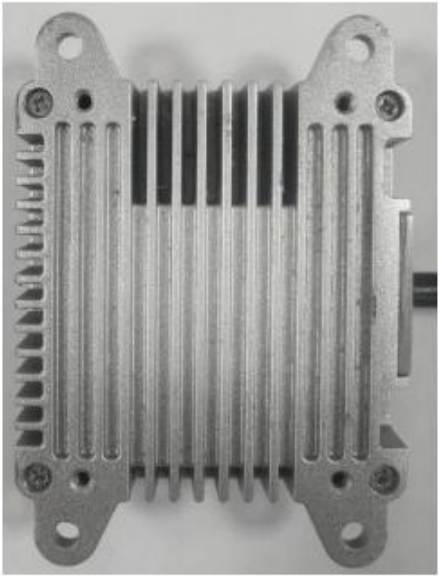
技术规格参数：

类别	参数	技术指标
雷达特性	雷达波段	76 ~ 81 GHz
雷达特性	调制方式	FMCW（调频连续波）
雷达特性	天线配置	2 发 4 收（2Tx / 4Rx）
雷达特性	水平向角度	±75°
雷达特性	启动时间	≤ 1 s
雷达特性	自诊断功能	是
预警范围	低速模式 — 横向	0.2 ~ 2 m
预警范围	低速模式 — 纵向	-4 ~ 4 m
预警范围	高速模式 — 横向	0.2 ~ 4 m
预警范围	高速模式 — 纵向	-7 ~ 7 m
预警范围	预警速度区间	-70 ~ +70 km/h
探测性能	距离分辨率	0.1 m
探测性能	速度分辨率	0.6 m/s
探测性能	更新速率	30 ms

2.1 电气及环境特性

参数项	技术指标
功率	< 5 W

工作电压	6 ~ 36 V
工作温度	-40 °C ~ +120 °C
安装方式	侧面垂直安装（天线朝上）



三、安装方式

3.1 系统组成

SD7701R 系统由以下三个部件组成：

- SD7701R 雷达本体 × 1（安装于车辆右侧）
- LED 报警灯 × 1（建议安装于右侧 A 柱，方便驾驶员观察）
- 蜂鸣器 × 1（安装于驾驶室内，便于听清预警声）

报警灯与蜂鸣器无硬性规定安装位置，可根据车辆实际情况灵活布置。

3.2 安装步骤

步骤一：确定安装位置

SD7701R 雷达安装于车辆右侧车身，安装高度在 0.6m ~ 1.2m 之间。

步骤二：雷达方向校准

雷达天线朝上垂直安装（黑色塑胶面是天线面，朝外）。若装在右侧，雷达的出线方向应指向车尾，即雷达平面法线必须与车辆正常行驶前进方向垂直。

步骤三：固定雷达

使用配套支架及螺丝将雷达牢固固定在车身右侧，确保安装牢固、无松动。

步骤四：走线连接

将雷达线束沿车身内侧走线，连接至电源、报警灯及蜂鸣器，确保接线正确可靠。

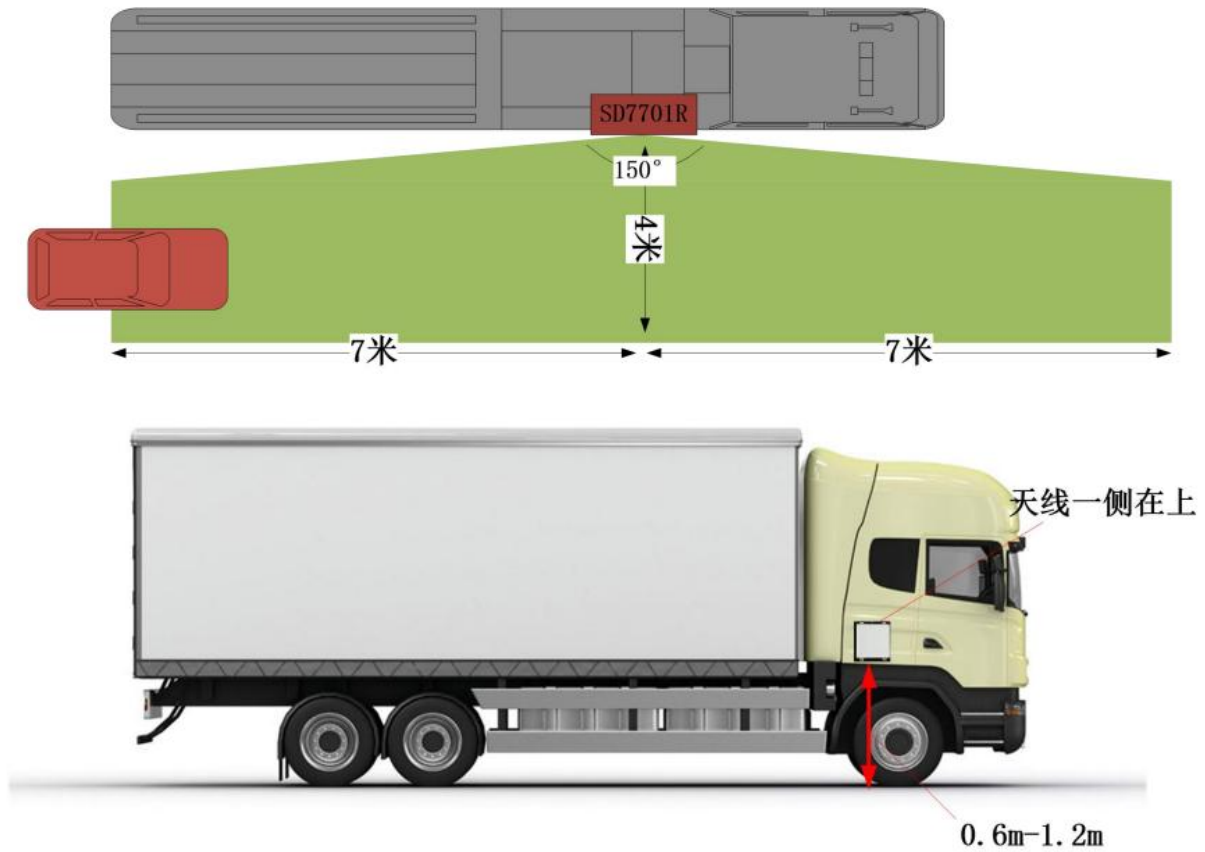
步骤五：功能测试

上电后观察报警灯是否正常闪烁（自检），在车辆右侧盲区放置测试目标，验证预警功能是否正常。

3.3 安装要求汇总

- 安装位置：车辆右侧车身，天线朝上垂直安装

- 安装高度：0.6m ~ 1.2m（距地面）
- 方向要求：雷达平面法线与车辆前进方向垂直，出线方向指向车尾
- 报警灯建议安装位置：右侧 A 柱，便于驾驶员观察
- 校准要求：确保雷达未变形，固定牢固，线束连接可靠



四、产品使用注意事项

⚠ 电源要求

工作电压范围为 6 ~ 36V，请使用稳定的直流电源供电，避免因电压不稳定导致雷达工作异常。

⚠ 安装方向

雷达必须垂直安装，天线朝上，出线方向指向车尾。安装方向错误将导致探测区域偏移，影响预警效果。

⚠ 机械防护

安装时请确保雷达本体未变形，切勿挤压、磕碰、摔打雷达。安装后需确认固定牢固，防止车辆行驶中松动。

⚠ 电磁环境

安装时尽量远离频繁启动的大功率用电设备和电机等具有强磁场干扰的位置，以免影响雷达正常工作。

⚠ 测试环境

测试时，雷达波束范围内不能有金属遮挡物，测试环境尽量空旷，以免影响测量结果。

⚠ 产品完整性

安装时确保雷达为出厂原装件，切勿自行拆装，私自拆装将导致保修失效。